

Work Order ID 52738

October 13, 2009 1:48:46 PM



Page 1

Item ID: D212-664-101TRN

Accept



Setup Start



Revision ID: C

Stop



Item Name: Crosstube Turning Detail

Start Date: 14/10/2009 Start Qty: 1.00



Cust Item ID:

Required Date: 30/10/2009 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: *[Signature]*

Date: 09-10-13

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop



| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Draw Number | Draw Rev. | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--------------------------|----------------------|----------------|--------------|--------------|---------------|---------------|------------------|----------------|
| Draw Nbr | Revision Nbr | | | | | | | | |
| D212-664-141 / | Rev C | | | | | | | | |

100

0.00



MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

0.00

Mori Seiki CNC Lathe Large

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA113□2-Turn first side as per Folio FA113□3-File down transition lines smooth.

G.M. 02-10-14 ①

110

0.00



QC1- Inspect dimensions to dimension sheet

QC

Memo

0.00

Quality Control

G.M. 02-10-14 ①

120

0.00



MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

0.00

Mori Seiki CNC Lathe Large

1-Turn second side as per Folio FA113□2-File down transition lines smooth. □3-Remove sand and plugs

G.M. 02-10-14 ①

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Item ID: D212-664-101TRN

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Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

130

QC1- Inspect dimensions to dimension sheet

0.00



QC

Memo

0.00

Quality Control

Am 09-10-14 ①

140

QC8- Inspect parts - second check

0.00



QC

Memo

0.00

Quality Control

① ① - Awn 9-10-14

150

Crosstubes Chemical Conversion

0.00



HandFXtube

Memo

0.00

Hand Finishing Crosstubes

Am 09-10-14 ①

Work Order ID 52738

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Page 3

Item ID: D212-664-101TRN

Accept



Setup Start



Revision ID: C

Stop



Item Name: Crosstube Turning Detail

Start Date: 14/10/2009 Start Qty: 1.00



Cust Item ID:

Required Date: 30/10/2009 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

160

QC3- Inspect Part Finish

0.00



QC

Memo

9-10-14

0.00

Quality Control

170

Packaging

0.00



Packaging

Memo

Identify and Stock in kanban rack Location: 2A

0.00

Packaging

Q.M. 09-10-15

180

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

09/10/15

MF
09-10-15

Picklist Print

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Page 1

Work Order ID: 52738

Parent Item: D212-664-101TRNRevC

Parent Item Name: Crosstube Turning Detail

Start Date: 14/10/2009

Required Date: 30/10/2009

Start Qty: 1.00

Required Qty: 1.00

Comments:

| Component Item ID/ Item Name | Replacement Item ID | Mfg/ Purch | Bin Item | Primary Location | Last Location | Route Seq ID | Unit of Measure | Qty on Hand | Remaining Qty To Pick | Qty Issued | Date Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|--------------------------|---------------|----------------|--------|
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|--------------------------|---------------|----------------|--------|

D6005-128RevA Manufactured No

120

Each

15.0000

1.0000



Crosstube Material



an 09-10-14 (C)

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

LG

15

34686

1

34775

2

38337

12

1

| | |
|---|----------------------------------|
| DART AEROSPACE LTD | Work Order: 52738 |
| Description: Crosstube Assembly (205/212/412 High Fwd) | Part Number: D212-664-141 |
| Inspection Dwg: D212-664-141 Rev: C | Page 1 of 1 |

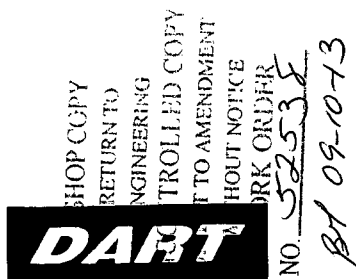
FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

| | Inspection Sheet Drawing Dimension | Tolerance | Actual Dimension | Accept | Reject | Method of Inspection | Comments |
|--------|---------------------------------------|---------------|---------------------|--------|--------|-------------------------|----------|
| SIDE A | 0.200 | +/-0.010 | 0.200 | / | | | |
| | R0.063 | +/-0.010 | R0.063 | / | | | |
| | 2.740 | +0.005/-0.000 | 2.743 | / | | | |
| | 5.097 | +/-0.030 | 5.097 | / | | | |
| | 2.304 | +0.005/-0.000 | 2.309 | / | | | |
| | 2.340 | +0.005/-0.000 | 2.345 | / | | | |
| | 2.398 | +0.005/-0.000 | 2.403 | / | | | |
| | 2.448 | +0.005/-0.000 | 2.453 | / | | | |
| | 2.498 | +0.005/-0.000 | 2.503 | / | | | |
| | 2.549 | +0.005/-0.000 | 2.554 | / | | | |
| | 2.599 | +0.005/-0.000 | 2.604 | / | | | |
| | 2.671 | +0.005/-0.000 | 2.675 | / | | | |
| | 2.701 | +0.005/-0.000 | 2.706 | / | | | |
| SIDE B | 0.200 | +/-0.010 | 0.200 | / | | | |
| | R0.063 | +/-0.010 | R0.063 | / | | | |
| | 2.740 | +0.005/-0.000 | 2.741 | / | | | |
| | 5.097 | +/-0.030 | 5.097 | / | | | |
| | 2.304 | +0.005/-0.000 | 2.309 | / | | | |
| | 2.340 | +0.005/-0.000 | 2.345 | / | | | |
| | 2.398 | +0.005/-0.000 | 2.403 | / | | | |
| | 2.448 | +0.005/-0.000 | 2.453 | / | | | |
| | 2.498 | +0.005/-0.000 | 2.503 | / | | | |
| | 2.549 | +0.005/-0.000 | 2.554 | / | | | |
| | 2.599 | +0.005/-0.000 | 2.604 | / | | | |
| | 2.671 | +0.005/-0.000 | 2.675 | / | | | |
| | 2.701 | +0.005/-0.000 | 2.706 | / | | | |
| | 126.51 | +/-0.020 | 126.510 | / | | | |

| | | | |
|-------------------------|------------------------|----------------------------|-----|
| Measured by: Q.M | Audited by: A.M | Prototype Approval: | N/A |
| Date: 02-10-14 | Date: 9-10-14 | Date: | N/A |

| Rev | Date | Change | Revised by | Approved |
|-----|----------|--|------------|----------|
| A | 05.04.27 | New Issue (P/O D412-664-101) | KJ/JLM | |
| B | 06.03.15 | Tolerance revised for 5.097 per Dwg Rev update | KJ/JLM | |
| C | 07.05.28 | Dwg Rev updated | KJ/JLM | |



| | | | |
|----------------------|--------------------------------|---|------------------------|
| DESIGN PH | DRAWN BY PH | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| CHECKED GP | APPROVED [Signature] | DRAWING NO. D212-664-141 | REV. C SHEET 1 OF 3 |
| DATE 07.03.08 | | TITLE XTUBE ASS'Y (205/212/412 HI FWD) NTS | |
| A | 00.12.12 | NEW ISSUE | |
| B | 05.02.04 | ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES | |
| C | 07.03.08 | REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS | |

RELEASED

07.04.24 **[Signature]**

DEO ATTACHED

| Qty | Part Number | Description |
|-----|----------------|---|
| X | D212-664-141 | CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD) |
| 1 | D6005-128 | CROSSTUBE |
| 2 | D2893-1 | SUPPORT |
| 4 | D3595-063-450 | RUBBER CUSHION |
| 4 | MS21920-25 | CLAMP (OR MS21920-26) |
| A/R | MAGNOBOND 6398 | ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE) |

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6005-128
FINISHED LENGTH = 126.51±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 10) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT
- 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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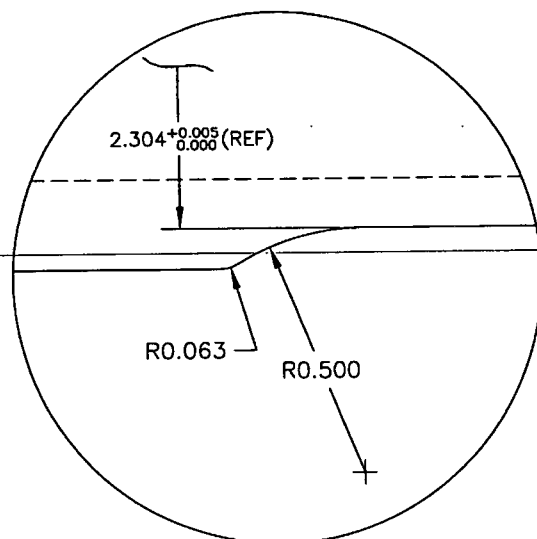
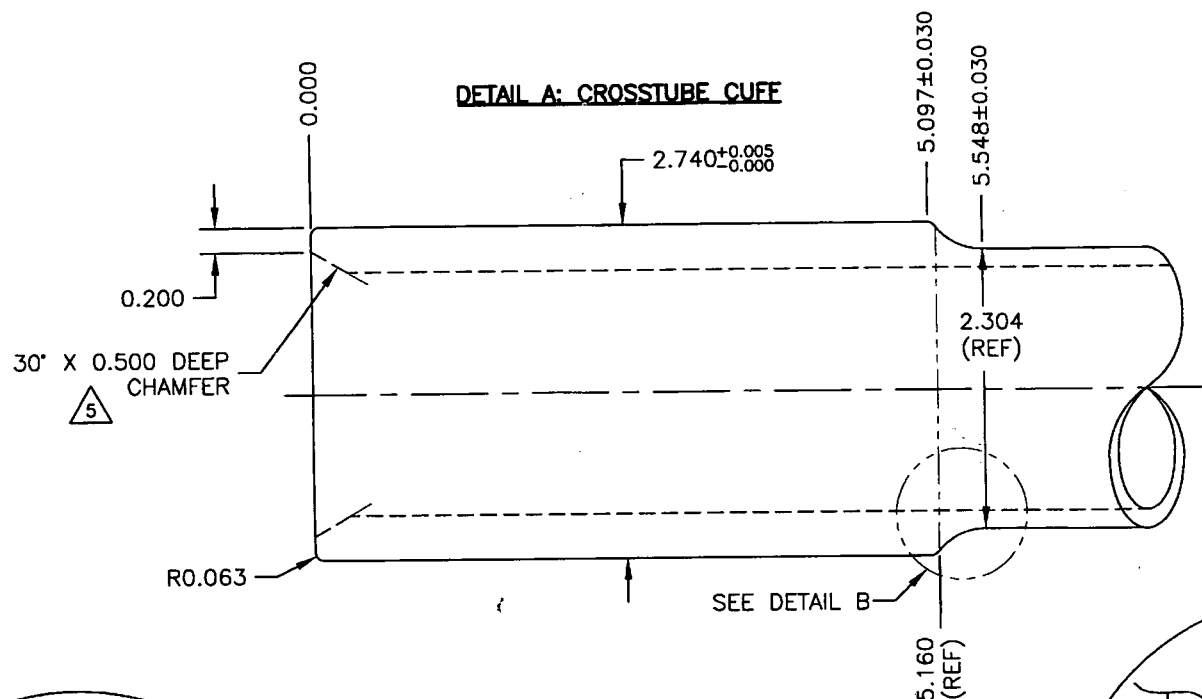
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67.04.24 (P)
PER E.N. 887

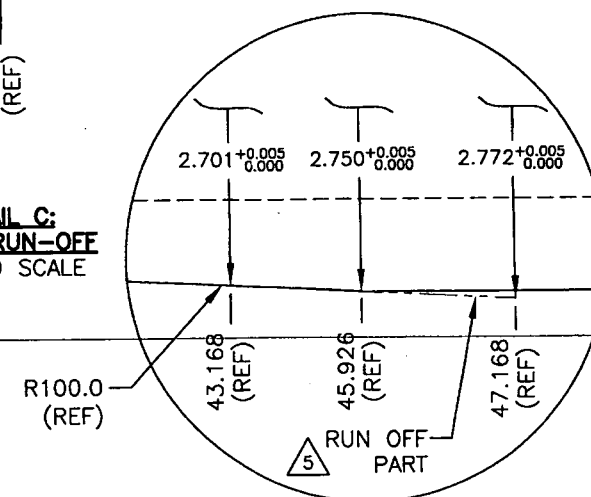
DEO ATTACHED

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 52535

PH 09-10-13



**DETAIL C:
TAPER RUN-OFF**
NOT TO SCALE



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| | | | |
|------------------|----------------|---|--|
| DESIGN PH | DRAWN BY PH | DART | DART AEROSPACE LTD. WARRICKSBURY, OXFORD, ENGLAND |
| CHECKED J | APPROVED J | DRAWING NO. D212-664-141 | REV. C SHEET 3 OF 3 |
| DATE 07.03.08 | | TITLE XTUBE ASS'Y (205/212/412 HI FWD) | SCALE 1:1 |

| | | | | | | | |
|-----------------------------|----------------------|-------------------------|---|--|--------------------------------|---------------------------|--------------|
| DRAWING NO. D212-664-141 | TITLE CROSSTUBE | REV. C | DART AEROSPACE LTD ENGINEERING ORDER | | D.E.O. NO. D212-664-141-C-1 | SHEET NO. SHEET 1 OF 1 | SCALE NTS |
| DRAWN <i>JP</i> | CHECKED <i>PS</i> | MFG. APPR. <i>JP</i> | APPROVED <i>MD</i> | | DE APPR. <i>MD</i> | | |
| DATE 09.05.01 | DATE 09.06.15 | DATE 09.06.15 | DATE 09/06/16 | | DATE 09/06/16 | | |

CHANGE:

ADD THE FOLLOWING CROSSTUBE ASSEMBLY:

| Part Number | Description |
|---------------|-----------------------------------|
| D212-664-141B | CROSSTUBE ASSEMBLY (214 HIGH FWD) |

THE D212-664-141B CROSSTUBE HAS THE SAME PARTS LIST AS THE D212-664-141 CROSSTUBE. HOWEVER, INSTALL THE SUPPORTS AS SHOWN IN FIGURE 1 OF THIS ENGINEERING ORDER. THE NEW KIT IS OTHERWISE ASSEMBLED PER THE D212-664-141 CROSSTUBE.

RELEASED
09/06/16

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ENGINEERING
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SUBJECT TO APPROVAL
WITHOUT NOTICE
WORK ORDER
NO. *09-10-13*
52538

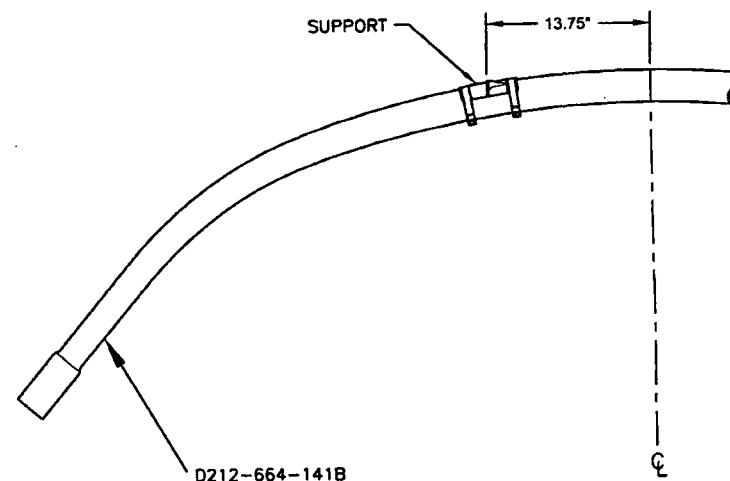


FIGURE 1 - SUPPORT INSTALLATION